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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,393	08/05/2003	Mutsumi Saito	FUJA 20.562	9149

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KATTEN MUCHIN ROSENMAN LLP
575 MADISON AVENUE
NEW YORK, NY 10022-2585

EXAMINER

HERNANDEZ, JOSIAH J

ART UNIT	PAPER NUMBER
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2609

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/14/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/634,393	SAITO, MUTSUMI	
	Examiner	Art Unit	
	Josiah Hernandez	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 05 August 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>08/05/2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 3, 5, 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asghar et al. (US 6,032,116) in view of Cox et al. (US PGPub 2002/0046021).

As to claim 1, Asghar discloses a speech processing apparatus for enhancing formant components of speech (see column 1 paragraph 1; column 2 lines 11-15) comprising: a calculating function unit which calculates a distance between linear spectrum pairs of a speech signal (see column 1 paragraph 1; column 2 lines 55-62; column 4 lines 5-10), an adjusting function unit which adjusts the linear spectrum pairs so that a distance between linear spectrum pairs become

closer in distance (see column 3 lines 55-65; column 5 lines 19-25). Asghar does not specifically teach measuring the distance between adjacent orders of linear spectrum pairs of a speech signal as required by claim 1. Cox teaches calculating the distances between adjacent frames of line spectrum pairs. Then adjusting the frames so that close LSP become even closer (see [0010]). It would have been obvious to have used distance measuring between adjacent LSP as disclosed by Cox in junction with distance analysis between the speech signal and the reference signal codebook LSP superimposed on each other in Asghar. Doing so would to adjust the LSPs so that the noise in the speech signal is either not noticeable or extracted. Asghar and Cox do not specifically disclose outputting the speech signal based on the adjusted linear spectrum pairs. It would have been obvious to someone skilled in the art that the purpose of such an invention is to enhance the intelligibility of a speech signal by adjusting the distance between LSPs and then outputting the modified signal. If the modified signal is not outputted then there would not be an enhanced signal to use in a wireless communication area, for instance, and the invention would not be useful.

As to claim 5, Asghar discloses a speech processing apparatus for enhancing formant components of speech (see column 1 paragraph 1; column 2 lines 11-15) comprising: a calculating function unit which calculates a distance between linear spectrum pairs of a speech signal (see column1 paragraph 1; column 2 lines 55-62; column 4 lines 5-10), an adjusting function unit which adjusts the

linear spectrum pairs so that a distance between linear spectrum pairs become closer in distance (see column 3 lines 55-65; column 5 lines 19-25). Asghar does not specifically teach measuring the distance between adjacent orders of linear spectrum pairs of a speech signal as required in 1 and 5. It is also noted that Asghar does not disclose a mobile communication terminal comprising of a baseband converting function, and an extracting function as required in claim 5. Cox teaches using a converting function unit which converts a wireless frequency signal to a baseband signal (see [0023] and [0024]) and an extracting function unit which decodes speech parameters from speech encoding parameters of the baseband signal to extract linear spectrum pairs and sound sources parameters (see [0024]). Cox also teaches calculating the distances between adjacent frames of line spectrum pairs. Then adjusting the frames so that close LSP become even closer (see [0010]). It would have been obvious to have used a mobile communication terminal comprising a baseband converting unit, an extracting function, and a distance measurer that measures the distance between adjacent LSP as disclosed by Cox in junction with distance analysis between the speech signal and the reference signal codebook LSP superimposed on each other in Asghar. Doing so would adjust the LSPs so that the noise in the speech signal is either not noticeable or extracted. Asghar and Cox do not specifically disclose outputting the speech signal based on the adjusted linear spectrum pairs. It would have been obvious to someone skilled in the art that the purpose of such an invention is to enhance the intelligibility of a

speech signal by adjusting the distance between LSPs and then outputting the modified signal. If the modified signal is not outputted then there would not be an enhanced signal to use in a wireless communication area, for instance, and the invention would not be useful.

As to claims 2 and 6, Asghar discloses a weighting function unit which weights adjusting amounts of the linear spectrum pairs in accordance with the frequencies of the linear spectrum pairs (see column 3 lines 20-30 and lines 55-67).

As to claims 3 and 7, Asghar discloses a restricting function unit, which restricts the orders or the frequency range of the linear spectrum pair adjustment (see column 7 lines 62-67 and column 8 lines 1-5).

3. Claims 3 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asghar et al. (US 6,032,116) in view of Cox et al. (US PGPub 2002/0046021) as applied to claims 1, 2, 5, and 6 above, and in further view of Zinser, Jr. et al. (US 6,098,036).

As to claims 4 and 8, Asghar does not specifically disclose using band pass or band-elimination filters. Zinser teaches using a band-pass filter, which passes,

said specific frequency component of the speech signal before enhancement (see column 12 lines 31-36 and figure 3). Zinser also teaches the use of a low-pass filter and a high-pass filter in cascade, which removes a specific frequency component of an enhanced speech signal synthesized (see column 16 lines 45-49). It is obvious to someone skilled in the art that using a low-pass filter and a high pass filter in cascade creates a band-elimination filter. Zinser also teaches combining and outputting the signals from the two filters (see figures 3-5). It would have been obvious to have used the two filters disclosed in Zinser in the speech enhancing system disclosed in Asghar and Cox because doing so would allow the system to have low bit rate speech representation and high quality speech.

Conclusion

Any inquiry concerning this communication should be directed to Josiah Hernandez whose telephone number is 571-270-1646. The examiner can normally be reached from 7:30 pm to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xiao Wu can be reached on (571) 272-7761. The fax

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phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

J.H.

2/01/2007



XIAO WU
SUPERVISORY PATENT EXAMINER